Source Control Proposed Plan

WILCOX OIL COMPANY, BRISTOW, OK

JULY 10, 2018---DRAFT

9959131

Wilcox Oil Company Open House

Purpose

Provide Site Background Information

Present the Cleanup Alternatives Considered for Source Material

Describe the Preferred Alternative to address Source Material

Solicit the Public's Review and Comment

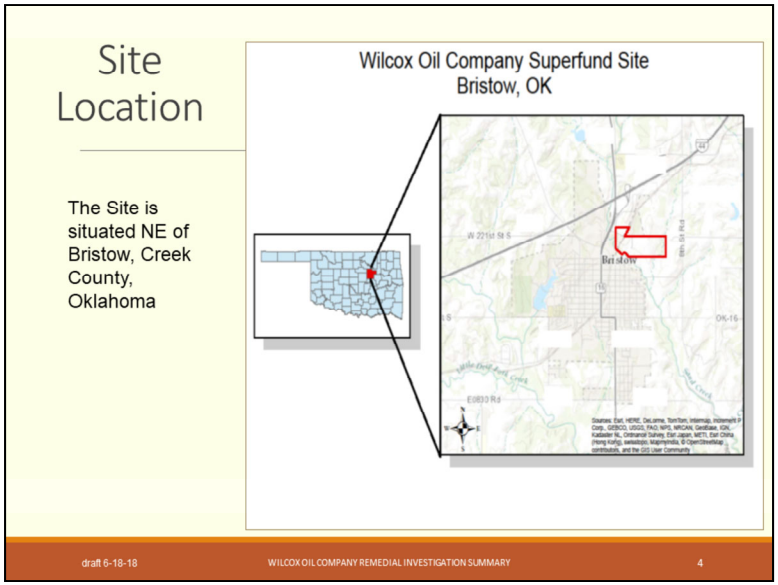
Wilcox Oil Company Open House

Community Involvement

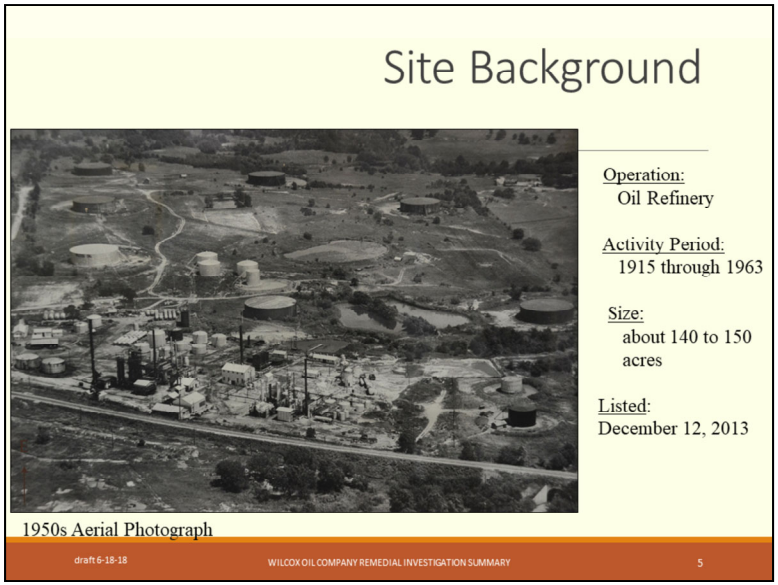
Site documents can be found at:
- Bristow Public Library
- Oklahoma Department of Environmental Quality

Web Resources
- ODEQ: www.deq.state.ok.us/lpdnew/index.htm
- U.S. EPA: http://www.epa.gov/superfund/wilcox-oil

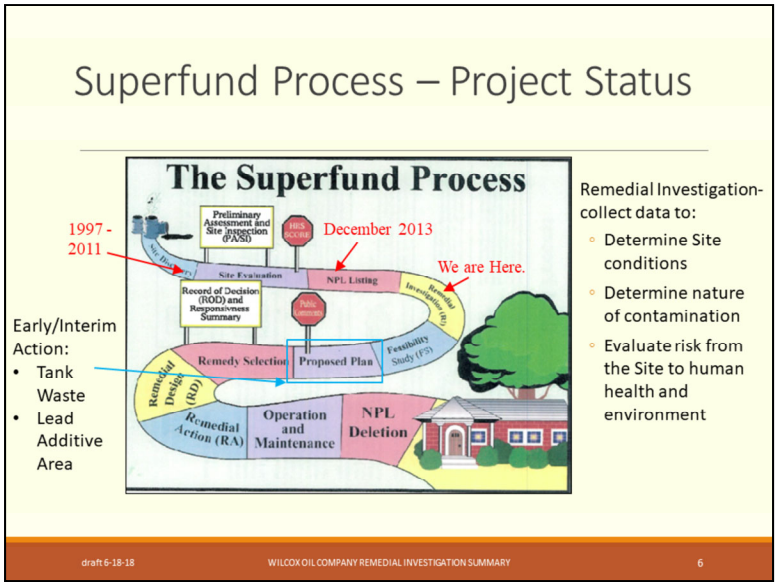
Comment Period
- June 28 Through July 31, 2018
- Submit oral comments today.
- Submit written comments today, or by postal mail, or by electronic mail
- EPA's responses to all comments:
- "Responsiveness Summary" of the "Record of Decision."



The site is located just **northeast** of central Oklahoma and just northeast of Bristow.



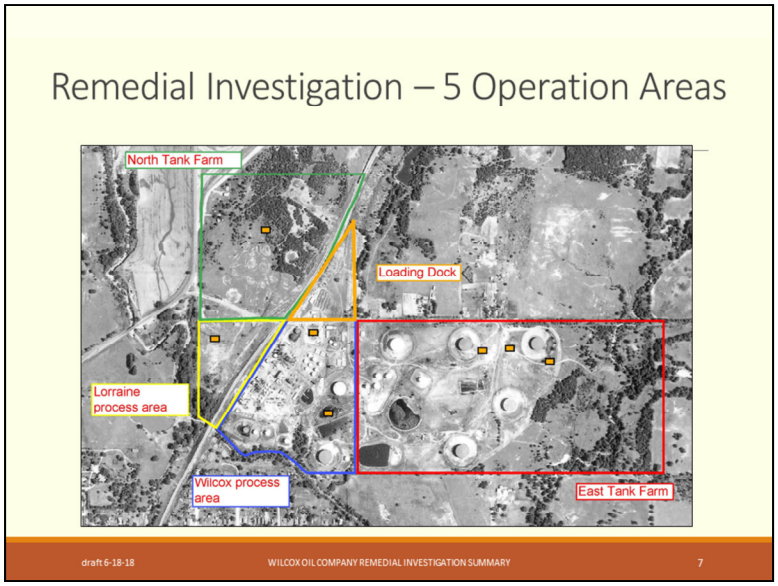
The site operated as an **Oil refinery** from about **1915 to 1963**. It is about **140 to 150** acres. This picture was taken sometime in the 1950s and shows the Wilcox plant during operation.



Summary of the Steps and notation of where the site is in the process.

What we are proposing today is an **early/interim action**. The proposed action is for cleanup of the **tank waste and lead additive area sources**.

Through this process, we are proposing to perform a **cleanup action that will take place during the investigation stage of the project**. This provides us with the **opportunity to cleanup areas** we know to be contaminated **early in the Superfund process rather than later in the process.** It **allows us to cleanup part** of the site **before** we complete the **entire site-wide investigation and site-wide cleanup decision document**.



The **site has been broken down into 5 areas based on operating history**. This is a 1956 aerial photograph that shows each of the site's operation areas.

Orange squares represent residences. 3 of which are currently occupied.

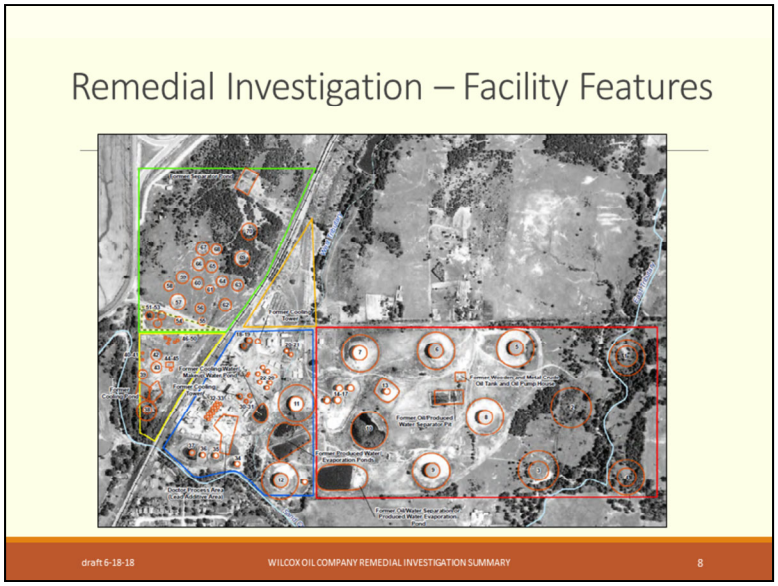
North Tank Farm: old Lorraine Refinery (~27 acres)

Lorraine Process Area (~9 acres) 42000 gal capacity tanks (~15-20 tanks)

Wilcox Process Area (~27 acres)

Loading Dock (~7 acres)

East Tank Farm: old Wilcox Refinery (~80 acres) 55,000barrel capacity tanks (10-15 tanks)



This figure shows some of the features associated with the refinery operations and the challenges we face.

The Sanborn Insurance Maps indicate that the property contained about **80 storage tanks of various sizes**, a cooling pond, separation ponds, and around **10 or more buildings housing refinery operations**. The map also indicated that **crude oil, fuel oil, gas oil, distillate, kerosene,** and benzene (petroleum ether) were all stored on the property by the Lorraine /Wilcox Refining Company.

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Lorraine Process Area (~9 acres) 42000 gal capacity tanks (~15-20 tanks)

Wilcox Process Area (~27 acres)

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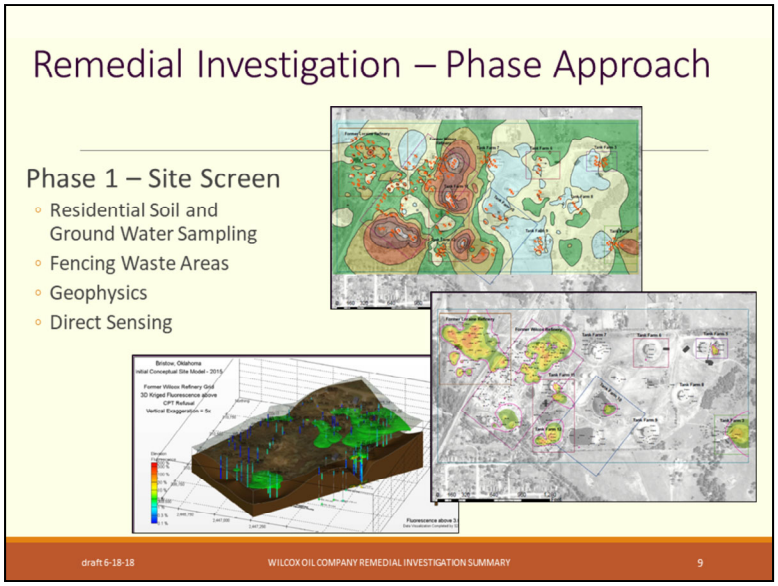
Some wastes that may be associated with this type of facility include **crude oil, tank residues, brine, acid and caustic residue, heavy metals, petroleum products, coke, sulfur compounds, and solvents**. Waste management practices are unknown for this facility.

Lorraine: 1915 to 1937. Wilcox purchased Lorraine in 1937.

Wilcox: 1920 to 1963: upgraded from a 1000 barrel a day operation to a 4000 barrel a day operation in 1929.



We have gathered a lot of data through several field investigation events. Phase 1 started and ended in 2015.

During Phase 1, we completed a site screen which included ground water well sampling, soil sampling, fencing waste areas, a geophysics study and a direct sensing study.

The ground water and soil sampling for this phase focused on the residential properties. Based on data results, the ground water wells are safe to use and no immediate health risk is identified for the soil.

The geophysics study and direct sensing investigations helped us understand the soil thicknesses across the site and identified areas of potential contamination that need further investigation.

During Phase 1, we were able to complete approximately 200 LIF locations

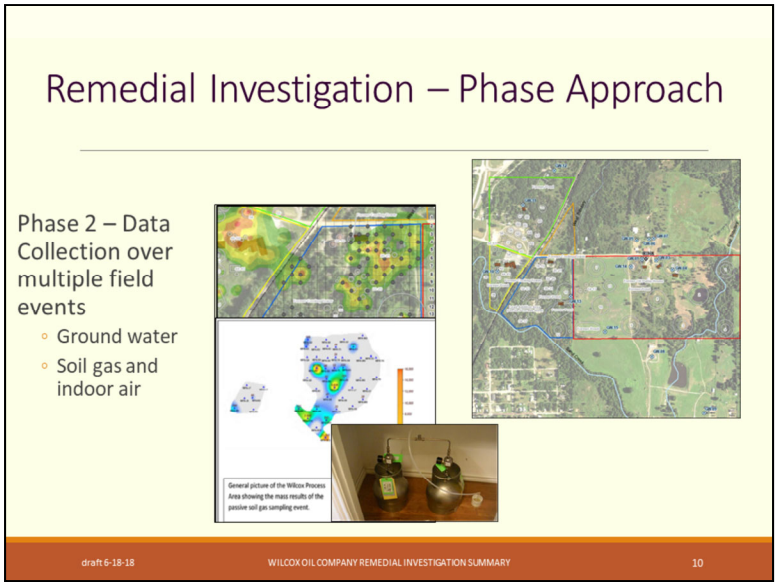
68 East Tank Farm

34 Lorraine

98 Wilcox

30 direct push locations

>100 XRF locations throughout



Phase 2 started in 2016 and is ongoing. The last field event was completed in March 2018 for a total of 6 separate investigation events.

Because Phase 1 only provided **screening data**, additional direct measures of environmental conditions to **identify the type and concentration of the contaminants** present is necessary.

During **Phase 2**, we have investigated the **Ground water and air**.

One of the media we are concerned about is **air,** specifically **vapors that can be produced from the source material**. We used **passive gas samplers and indoor air samplers** to **determine if these vapors are present and if they are moving into the buildings where people can breath them**.

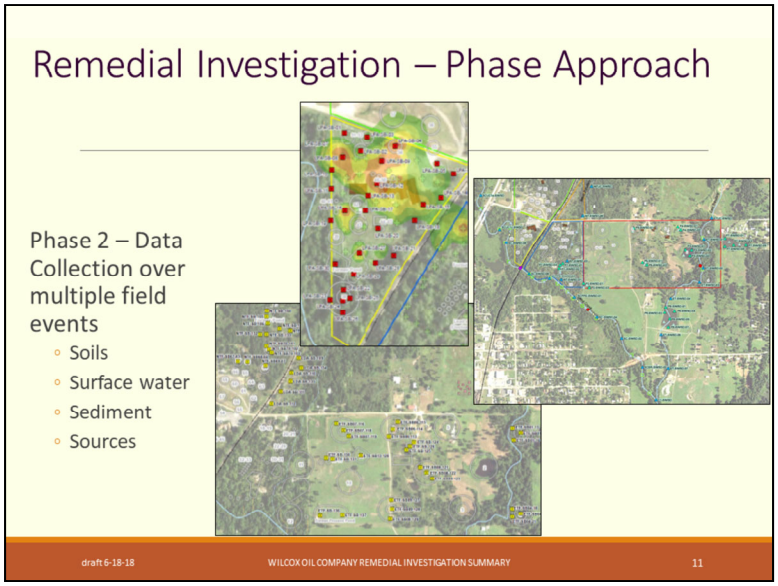
Based on the data, the **source areas have the potential to create vapors** and some **indoor air data** show that contaminants, including **benzene and ethylbenzene** exceed the screening numbers.

Approximately **14 wells sampled**.

Only one well was found to be unacceptable for drinking. This is the well located on the Lorraine process area and it has been closed.

During Mobilization 1:

149 passive gas locations and indoor air collected from 3 structures/homes



During Phase 2, we continued site investigations with soil, surface water, sediment, and source material sampling. We are in the process of compiling the data, interpreting the data, developing maps and evaluating nature and extent. In addition ,the data will be used to evaluate the potential human health and ecological risks associated with the contaminants. This work is ongoing.

Approximately 30 locations on Lorraine

Approximately 62 locations on Wilcox

Approximately 35 locations in the East Tank Farm

Approximately 6 locations in the Loading Dock Area

Approximately 24 locations in the North Tank Farm

Approximately 43 surface water and sediment co-located samples were collected from the ponds, creeks, and tributaries.

Sample intervals: 0-0.5”; 0.5-2’; 2-6’; 6-10’

During our investigation activities, **two source materials** were identified.: **tank sludge/solids** and the **lead additive area solids**

Source material is defined as material that **includes or contains hazardous substances, pollutants or contaminants** that act as a **reservoir for migration of contamination** to ground water, to surface water, to air, or acts as a source for direct exposure (EPA, 1991).

tank sludge/solid waste that can be either a contaminated oily tar-like viscous liquid and/or a black dry solid

Lead additive area: silty sparkling sand or a white, salt-like substance

Lead additive Area –

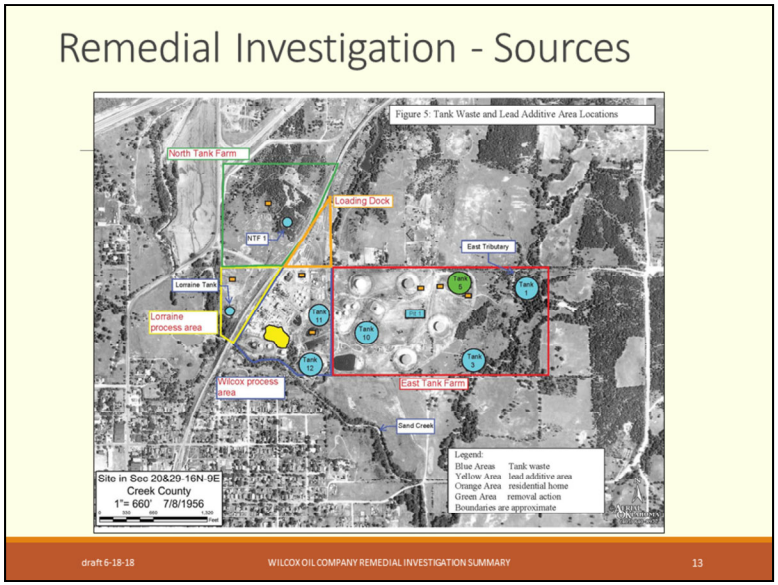
Concentrations	54,400mg/kg	5210	105,000

Ph	9.68	7.26	7.23
TCLP	133 mg/l	24.7	998

Tank waste –

PAHs (polycyclic aromatic hydrocarbons) are the primary contaminant group with Benzo(a)pyrene identified as the representative contaminant.

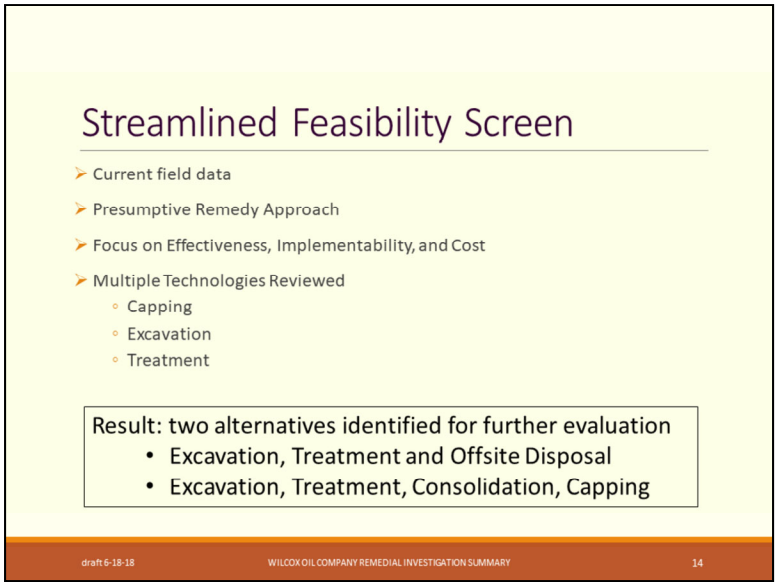
Concentrations range from 1.2 – 12 mg/kg



During the field investigation events, we identified 10 Source areas and 5 migration Pathways from the source areas to the Creeks. Several of these are located on residential properties.

The green circle represents the location of the removal action. The Removal action was completed in Sept/Oct 2018, and removed approximately 1349 tons of tank source material.

Through investigation activities we know these to be sources of contaminants that can migrate to the surrounding soil, surface water, sediment, ground water, and air. These 9 remaining sources are the focus of this proposed plan and are the areas proposed to be addressed earlier in the superfund process rather than later when the complete site investigation is complete.



Alternatives Screened from Consideration: Presumptive remedy guidance and Remediation Technologies Screening Matrix and Reference Guide, 4th Edition. Prepared for the U.S. Army Environmental Center.

Capping – vegetative cover

In-situ immobilization

Incineration

Thermal Desorption

Land Farming

Reclamation

Alternatives Evaluated

Alternative 1: No Action

Alternative 2: Excavation, Treatment and Offsite Disposal $4,135,294

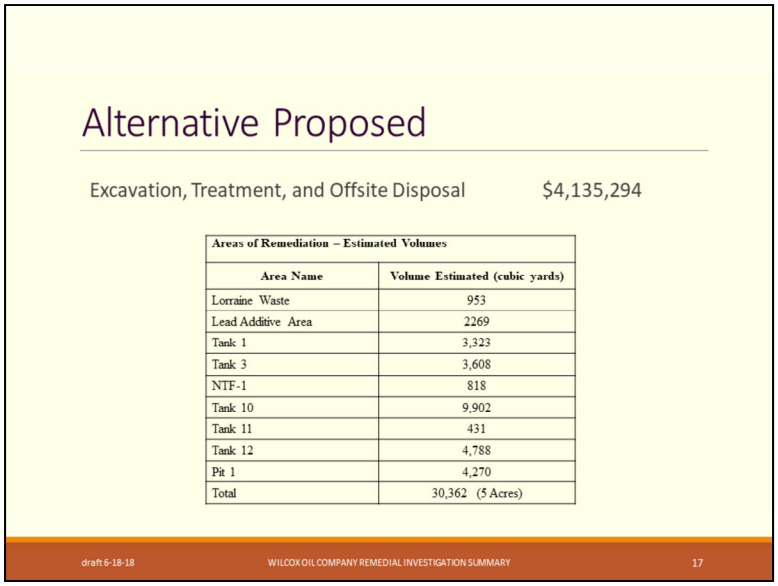
Alternative 3: Excavation, Treatment, Consolidation, Capping $4,633,269

Source Material Health-Based Target Levels[1]

Contaminant	Data Results (mg/kg)	Health Based Target Level (mg/kg)	Health-Based Target Level Basis
Lead	105,000	800	Protection of blood lead levels in workers
Benzo(a)pyrene	12	0.11	Residential Cancer Screening Number at 10-6 Risk

1- Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2017
mg/kg = milligram per kilogram

The Primary Differences between the two alternatives are related to the final location of the source material, future use restrictions, and future operations and maintenance.



The proposed cleanup up alternative for the source areas is Alternative 2: excavation, treatment, and offsite disposal.

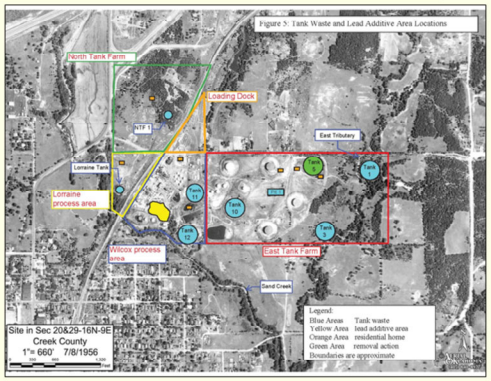
Cost: $4.1M and 30362 cubic yards (2269 lead 28,093 tank) and 40,989 tons

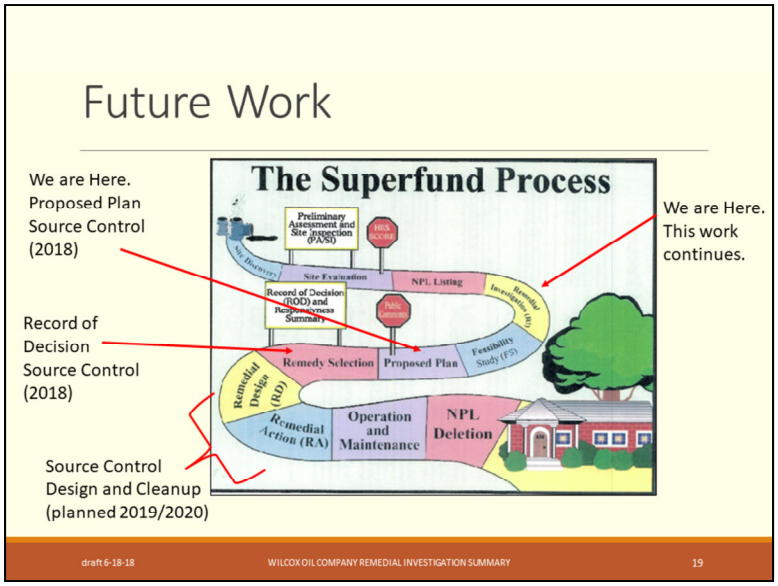
Alternative Proposed

Excavation, Treatment, and Offsite Disposal : Tank Waste and Lead Additive Area

Benefits:

- 9 Sources removed
- 5 migration Pathways to the Creek removed
- 4 Residential Properties addressed
- Overall Site Risk Reduction: Human and Ecological





We will work to have the Source Control Record of Decision finalized this year. During the next 2 years, we will be working towards completing the design work and final implementation.

At the same time, all investigation work associated with the remaining areas of the site will continue.

RI: work remains

- Data Gap Review
- Human Health and Ecological Risk Assessment
- Potential for Additional Sampling

RI Report

FS Report

Thank you for joining us this evening to learn about our proposed cleanup. While we answer your questions, I will leave up our contact information.

Any questions?